

W. W. Ball,

Tuyere,

N^o 43,892.

Patented Aug. 23, 1864.

Fig. 2.

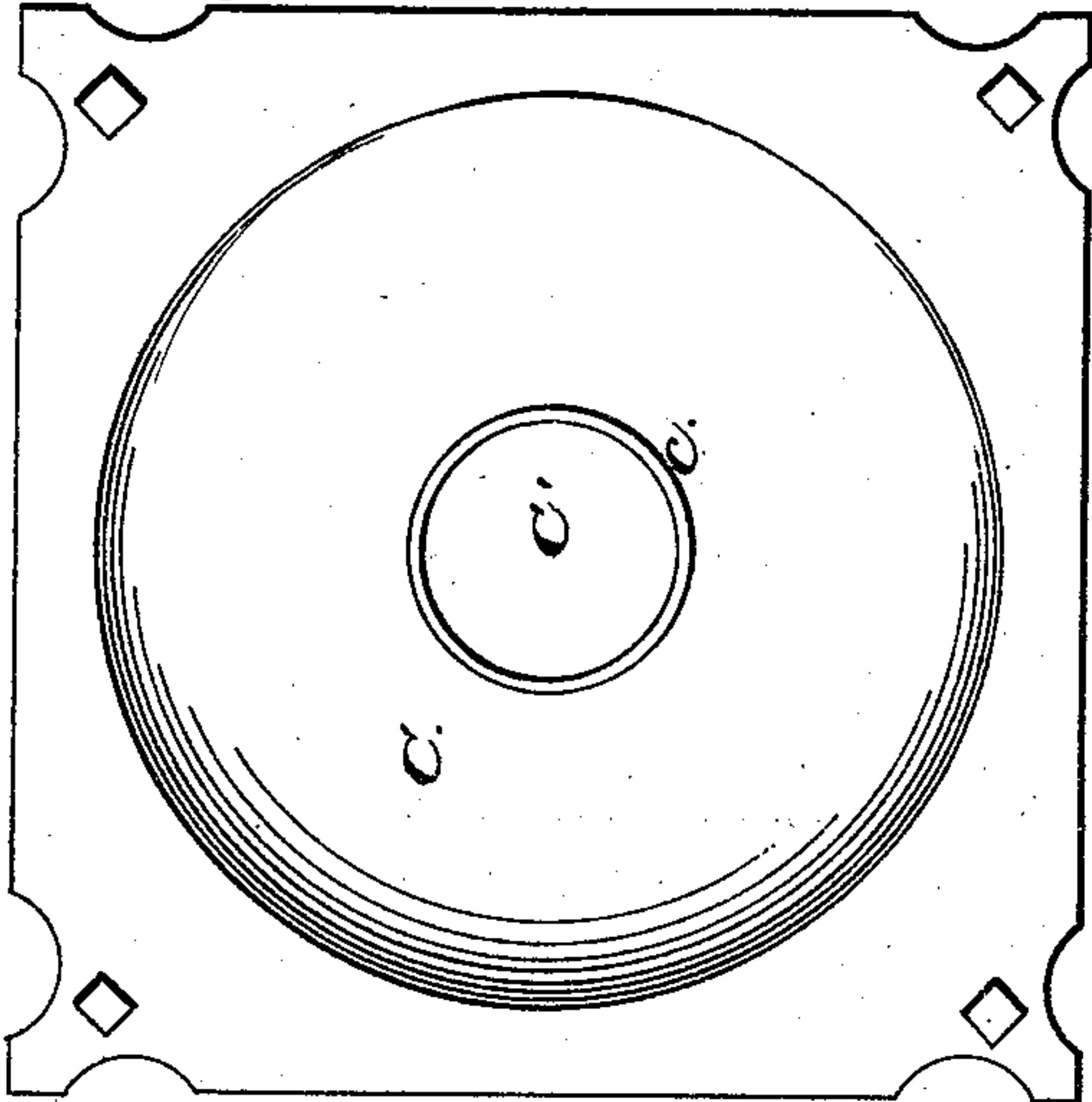


Fig. 1.

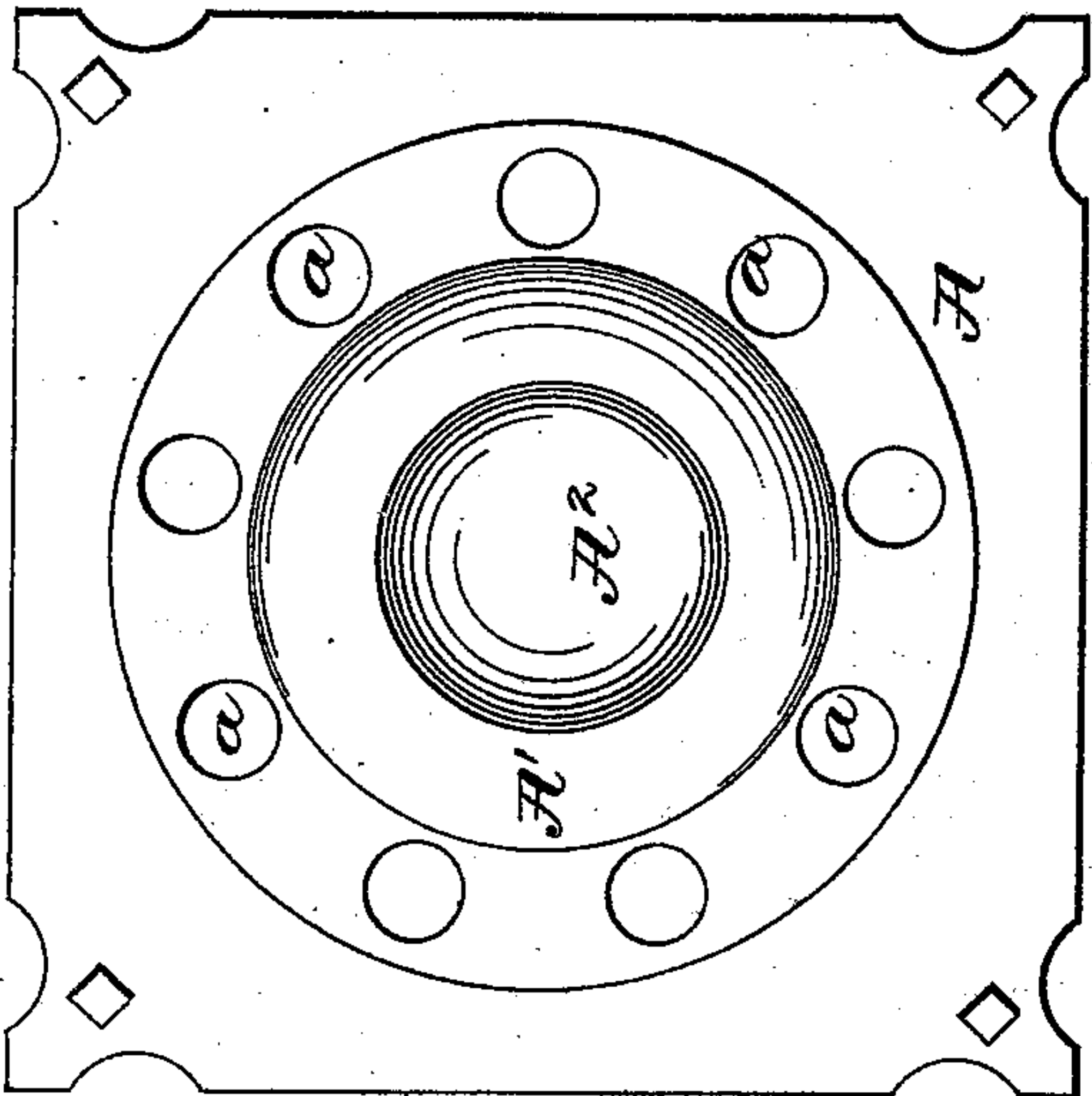
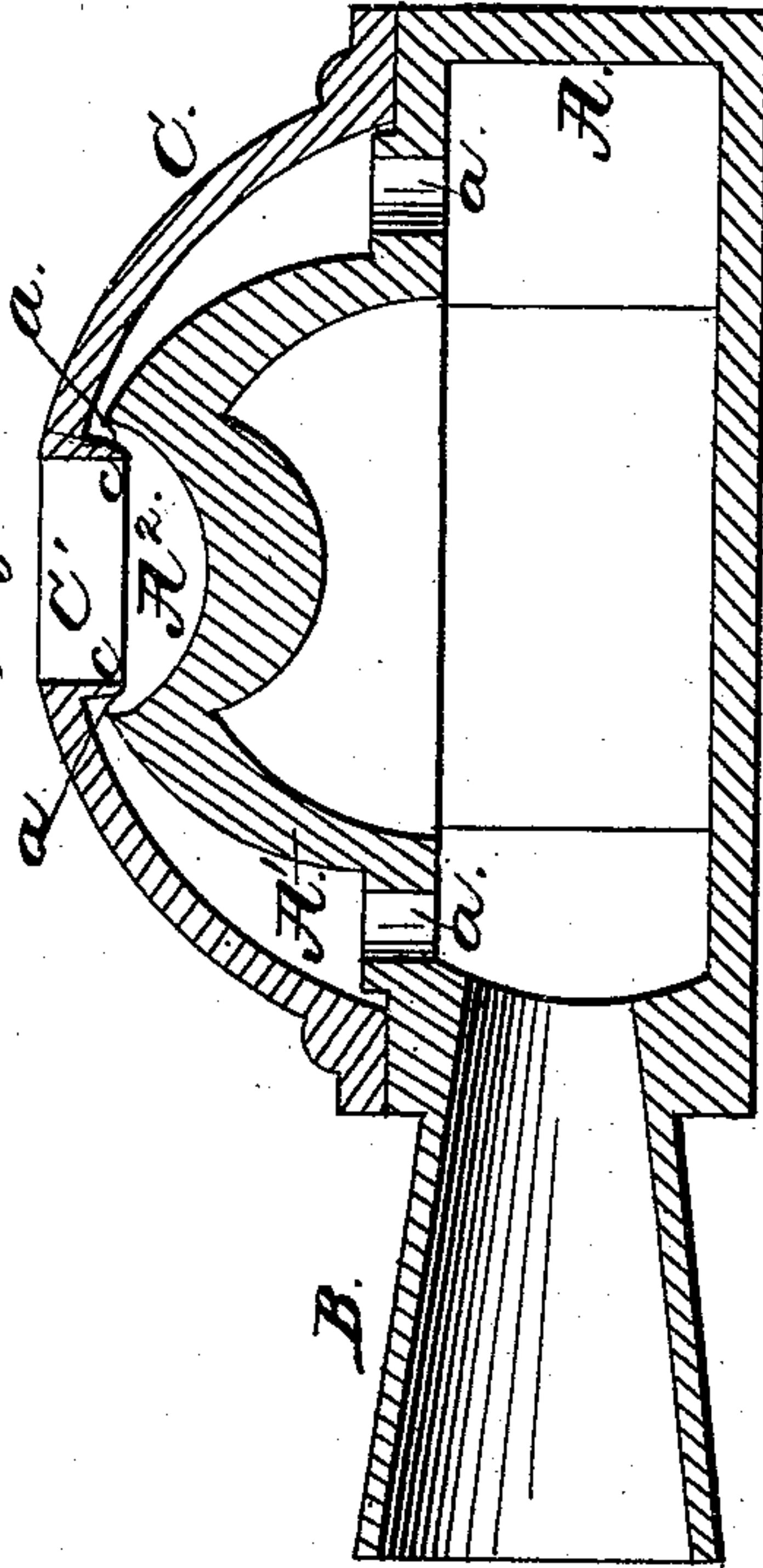


Fig. 3.



Witnesses:

C. D. Smith
Ph. Lang.

Inventor:

W. W. Ball
By Messrs. *Meyers & Co.*
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM WALDEN BALL, OF GRANDVIEW, ILLINOIS.

IMPROVED TUYERE.

Specification forming part of Letters Patent No. 43,892, dated August 23, 1864.

To all whom it may concern:

Be it known that I, WILLIAM WALDEN BALL, of Grandview, in the county of Edgar and State of Illinois, have invented a new and useful Improvement in Tuyeres; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan or top view of my improved tuyere with its cap or cover removed. Fig. 2 is a similar view of the cap looking from the under side. Fig. 3 is a vertical section in the line *x x*, showing the tuyere in condition for use.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in providing an effectual expedient for preventing coal, cinders, ashes, &c., from working into and clogging the tuyere, as will be hereinafter fully explained.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe its construction and operation.

In the accompanying drawings, A may represent the main body of a tuyere, of octagonal or other suitable form. Air may be forced from a pair of bellows into the box A of the tuyere through a nozzle, B, in customary manner. The top of the tuyere is formed at its center with a crown or dome, A', around the base of which are a series of apertures, *a*, through which the air may freely pass from the interior of the tuyere A to support the fire upon the hearth in which the tuyere may be embedded. C is a cap or cover, which may be cast or formed separately and secured upon the tuyere A in any suitable manner. In the top of the cap C is an opening, C', to and through which the air that is forced through the tuyere passes into the fire. In the top of the dome A' is formed a concavity or depression, A², which is concentric with and occupies a position directly beneath the opening C' in the cap C, and which is at top somewhat larger than said opening C', in order that a space or passage, *a'*, will exist between the upper edge or portion of the concavity A² and a circular flange, *c*, the latter

being formed around the opening C' on the under side of the cap C. This flange *c* projects downward into the concavity A², so that the upper edge of the latter occupies a position above the lower edge of the flange *c*. It will be understood that the cap C is embedded in the hearth of the forge, and that the fire is built immediately over the opening C'.

The effect of the employment of the flange *c* will be readily understood. When the forge is in operation, the blast from the bellows passes into the box A through openings *a*, space D, and passage *a'*, and thence out into the fire at the opening C'. Now, when the blast reaches the flange *c*, it is deflected by the latter in such manner that before passing out at the opening C' it has to pass down the sides of the concavity A² and then ascend at the center thereof. It is obvious that any coal, cinders, ashes, or other substance from the fire which may fall through the opening C' will be caught by the ascending blast of air and forced upward, so that it will be impossible for any of these substances to accumulate in the concavity A².

In like manner it will be impossible for the ashes, &c., to pass through the passage *a'* and lodge between the cap C and dome A', inasmuch as the flange *c* causes the air to pass in a downward direction in said passage *a'*. The simplicity of the invention renders a more detailed description unnecessary.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

The cap C, provided on the under side and around its central opening with a downwardly-projecting flange, *c*, in combination with the dome-shaped plate A', having a depression, A², in the top, the edge of which dome-shaped depression rises above the edge of the flange *c*, as shown and described, and all parts arranged for joint operation in the manner and for the purposes specified.

The above specification of my improvement in tuyeres signed this 27th day of May, 1864.

WILLIAM WALDEN BALL.

Witnesses:

CHARLES D. SMITH,
JAMES H. GRIDLEY.